DRAFT

TOTAL MAXIMUM DAILY LOAD (TMDL) DEVELOPMENT

for

BROOKS RUN

(FLOYDS FORK BASIN, BULLITT COUNTY, KENTUCKY)

Natural Resources and Environmental Protection Cabinet

Kentucky Division of Water

December 2001

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KENTUCKY DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION OF WATER

Frankfort, Kentucky

This report has been approved for release:

_____
Jeffrey W. Pratt, Director
Division of Water

_____
Date

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BROOKS RUN

(FLOYDS FORK BASIN, BULLITT COUNTY, KENTUCKY)

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TMDL FACT SHEET

BROOKS RUN

Project Name: Brooks Run: Organic Enrichment/Low DO/Pathogens/Nutrients

Location: Floyds Fork Basin, Bullitt County, Kentucky

Scope/Size: Brooks Run: River mile 0.0 to 6.1

TMDL Issues: Point Sources

Data Sources: Kentucky Department for Environmental Protection
Division of Water

Control Measures: KPDES Regulations

Water Quality Standard/Target: Maintain Dissolved Oxygen (DO) concentration greater than 5.0 milligrams per liter (mg/l). Maintain un-ionized Ammonia concentrations less than 0.05 mg/l, which translates to 4 mg/l total Ammonia under design conditions of pH (7.2 units) and temperature (25°C). Reduce Phosphorus concentrations to avoid nuisance algal blooms. Reduce Pathogens to meet criteria, which are: Fecal Coliform content shall not exceed 200 colonies per 100 ml as a monthly geometric mean based on not less than five (5) samples per month; nor exceed 400 colonies per 100 ml in twenty (20) percent or more of all samples taken during the month. These limits shall be applicable during the recreation season of May 1 through October 31. These standards are found within Regulation 401 KAR 5:031.

Summary: Brooks Run was determined as not supporting the designated use of aquatic life and contact recreation. Therefore, the stream was listed on the 303(d) list for Total Maximum Daily Load (TMDL) development. Brooks Run and several of its tributaries are impacted by organic enrichment, low DO, and Pathogens. Nutrients (Phosphorus) are also elevated, but not noted on the 303(d) list. The critical conditions are low stream flow and warm summertime conditions. The primary causes for these problems are the discharges from the privately owned wastewater treatment plants (WWTPs) located throughout the basin. Several of these have had, and continue to have, severe KPDES permit violations. The Kentucky Division of Water (KDOW) has undertaken a number of steps to rectify these conditions.

TMDL Development: Total Maximum Daily Loads, in pounds per day (lbs/day), are computed based on the allowable maximum concentration for Carbonaceous Biochemical Oxygen Demand (CBOD), Nitrogen Ammonia (NH3-N), and Total Phosphorus (TP) during the critical low-flow period. An effluent "load" for Fecal Coliform bacteria (FC) is also determined, in units of colonies per day. These parameters were chosen for TMDL development because they are the pollutants of concern for these stream segments. The calculations are based upon the replacement of all the existing WWTPs with a regional facility (or facilities) with a total design flow of 3.5 million gallons per day (mgd), to be owned and operated by the Bullitt County Sanitation District.

Summary of Total Maximum Daily Load Allocations

Source:	CBOD	NH3-N	FC	TP
All Sources	292	58.4	52,990 E6	29.2
Background	0	0	0	0
Waste Load Allocations (WLAs)	292	58.4	26,495 E6	29.2

Background loads are zero based on the critical low-flow conditions of these streams, which are dry during hot, summertime conditions. Permitted discharge loads were calculated using EPA-approved water-quality modeling procedures and regulatory water-quality standards. The loadings are based on a simple conversion of discharge permit concentrations multiplied by the WWTP size (mgd). Thus, if regional WWTPs are in need of expansion, the model runs and effluent limits will be revisited. An increase in loading could be approved. Total maximum daily loads of Fecal Coliform (FC) in colonies per day were computed based on the allowable maximum FC value, of 400 colonies per 100 milliliters of sample in no more than 20 percent of samples during routine (monthly) sampling. For point source dischargers, the FC count shall not exceed 200 colonies/100 ml of sample as a monthly average and shall not exceed 400 colonies per 100 milliliters of sample as a maximum of all samples taken during the month.

The dischargers are required to submit Discharge Monitoring Reports (DMRs) to the KDOW which includes a reporting of the monthly mean and the maximum FC determination of the effluent. The Waste Load Allocation (WLA) value is based on an FC count of 200 colonies/100 ml of sample.

Existing Loads and Load Reductions:

	Existing*	TMDL	Reduction
CBOD:	186 lbs/day	292	None**
NH3:	40.4 lbs/day	58.4	None**
Total P:	33.3 lbs/day	29.2	4.1 lbs/day
FC:	83,125 E6 col/day	26,495 E6	56,630 E6 col/day

* Existing loads are based upon the sum of the permitted loads from the existing WWTPs. The Fecal Coliform load is based upon the sum of loads of the FC violations measured on the August 1999 sampling trip.

** Concentrations (mg/l) will be reduced; however, the load is greater because the flow of the regional facility to serve the needs of northern Bullitt County is larger than the combined flows of existing WWTPs in Brooks Run. Total loading to the environment will likely be reduced because the regional facility will serve areas currently on poorly operating septic tank systems, plus eliminate several privately owned WWTPs in an adjacent stream basin.

Implementation Controls: Efforts have been underway since 1990 to improve conditions in Brooks Run. The KDOW has promoted the formation of a countywide sanitation district to provide a regional system to serve the wastewater treatment needs of northern Bullitt County. A sanitation district was formed in 1997 but received essentially no funding until 2000.

The district is currently in negotiations to purchase a number of the existing WWTPs. The next step will be the completion of a 201 Plan for determining the best method of providing regional sewer service to the area.

Because of the water quality problems in the area, the KDOW has denied six (6) requests for new or expanded privately owned WWTPs in the Brooks Run basin, as well as six (6) additional requests in adjacent stream basins over the past several years. Tap-on bans and enforcement actions have been applied to some of the existing WWTPs. The solution for improving water quality in this rapidly growing area is a regional system to properly collect and treat wastewater.

TMDL DEVELOPMENT

Brooks Run
Floyds Fork Basin, Bullitt County, Kentucky

Introduction

Section 303(d) of the Clean Water Act and the Environmental Protection Agency's (EPA) Water Quality Planning and Management Regulations (40 CFR Part 130) require states to develop Total Maximum Daily Loads (TMDLs) for water bodies that are not meeting designated uses under technology-based controls for pollution. The TMDL process establishes the allowable loadings of pollutants or other quantifiable parameters for a water body based on the relation between pollution sources and in-stream water quality conditions. States can then establish water-quality based controls to reduce pollution from both point and nonpoint sources and restore the quality of their water resources.

Problem Definition

Brooks Run lies entirely within a rapidly growing area of northern Bullitt County. The stream, from its mouth to a point near its headwaters (a distance of 6.1 miles), was first listed in Kentucky's 1990 303(d) list of impaired waters. The stream fails to support its designated uses of Warm Water Aquatic Habitat and Primary and Secondary Contact Recreation because of organic enrichment, low Dissolved Oxygen (DO), and Pathogens. Although not specifically listed, nutrients (Phosphorus) are also of concern. The primary sources of the problems are the numerous privately owned package wastewater treatment plants (WWTPs) located throughout the area. The Kentucky Division of Water (KDOW) continued to list the stream as not supporting in the 1992, 1994, 1996, and 1998 303(d) reports. Prior to the 1990 listing, in 1988 the stream was found to violate the Fecal Coliform (the indicator for Pathogens) standard, and based on this, a local church ended its practice of conducting baptisms in a pool of Brooks Run. Several unnamed tributaries to Brooks Run are also

impaired, and this report applies to these streams as well. Many of the WWTPs are located on these unnamed tributaries.

Efforts to improve these conditions by the KDOW also date back to 1990. Through letters and meetings with Bullitt County officials, the KDOW began promoting the creation of a regional wastewater treatment authority (sanitation district) to provide centralized wastewater treatment service for this area of northern Bullitt County. The KDOW began denying construction of new privately owned plants in the area. Expansion of existing facilities was tied to compliance history of the facility and other factors, such as specific location and existing permit limits. Some expansions were allowed if limits could be reduced such that there was a net improvement to water quality. Enforcement actions have also been undertaken against facilities in significant noncompliance. Facilities have been required to clean sludge from the creeks below their outfalls. Because of continuing water quality problems and lack of progress on implementing a regional solution, the KDOW began denying all requests for expansions in the mid 1990s. Six (6) requests for new or expanded facilities have been denied in the Brooks Run basin, and another six (6) were denied in nearby streams that are also within the rapidly growing northern Bullitt County area. All of these streams flow into Floyds Fork, which was the subject of a previous TMDL report. Appendix I includes a number of letters and a newspaper article that further describe the difficulties encountered in the attempt to provide centralized sewer service for this area.

In April 1997, Bullitt County formed a sanitation district. Three (3) local individuals agreed to serve as commissioners. A local engineering firm has been providing services for the district. Although essentially unfunded, without offices or staff, the district began looking into the wastewater treatment needs of the area. Through local agreements, a new WWTP is planned on Brooks Run at a major interchange of I-65 and Brooks Run Road. This facility will be publicly owned and operated, serve a major new industrial customer, and eliminate two (2) existing package plants. In addition, negotiations between the district and private owners are underway for the district to take ownership and operation of the existing treatment

plants. In 2000, Bullitt County received a community development grant through the regular session of the Kentucky General Assembly in the amount of $2 million. This funding was to be divided countywide among competing water and sewer projects, with a portion set aside for the Brooks Run area. Water quality conditions in Brooks Run are not likely to significantly improve until such time as the district is successful in acquiring and ultimately eliminating the package WWTPs through construction of a regional facility. The purpose of this TMDL report is to further describe these problems and determine effluent limits and possible loading values needed to restore water quality to meet state standards.

Description of Study Area

Brooks Run flows about seven (7) miles in a southerly direction from its headwaters along the Bullitt and Jefferson County line to its mouth. The stream empties into Floyds Fork at mile 3.7 (Figure 1). The drainage area of Brooks Run, at its confluence with Floyds Fork, is about ten (10) square miles. Stream slopes are fairly steep, and water moves quickly through the system. Pools, however, do exist along various reaches of the stream. Several unnamed tributaries (UT) drain into Brooks Run along its length, and much of the area is urbanized. Rapid growth and development are occurring throughout this area of northern Bullitt County. The corridor along I-65, a major north-south interstate, is developed with commercial and light industrial activities, and the demand for additional growth is high. Much of this growth has been delayed by the lack of adequate wastewater treatment capacity. The small towns of Hillview and Pioneer Village are located within the northern portion of the Brooks Run basin along unnamed tributaries and are currently served by privately owned WWTPs. The lower two (2) miles of Brooks Run is fairly rugged and mostly undeveloped. The most recent assessments indicate that Brooks Run from river mile 0.0 to 2.5 fully supports aquatic life and swimming uses, but is categorized as "threatened."

Floyds Fork has been the subject of a previous TMDL report, largely because of problems caused by privately owned package WWTPs located throughout the basin. Floyds Fork begins in Oldham County and flows 67 miles through Oldham, Jefferson, and Bullitt counties.

Drainage from Brooks Run and the adjacent Tanyard Branch flows into Floyds Fork in this growing area of northern Bullitt County. In 1991, there were 70 WWTPs located throughout the basin, sixteen (16) of them in this area of Bullitt County. The TMDL for Floyds Fork called for the elimination of many of these WWTPs by construction of regional wastewater treatment facilities. Regional systems have been constructed in both Oldham and Jefferson counties, and 22 package plants have been eliminated to date, with projects under construction to continue this progress. As mentioned previously, Bullitt County is in the early planning phase of similar projects.

Figure 1: Brooks Run Basin, Bullitt County, Kentucky, and Sampling Stations

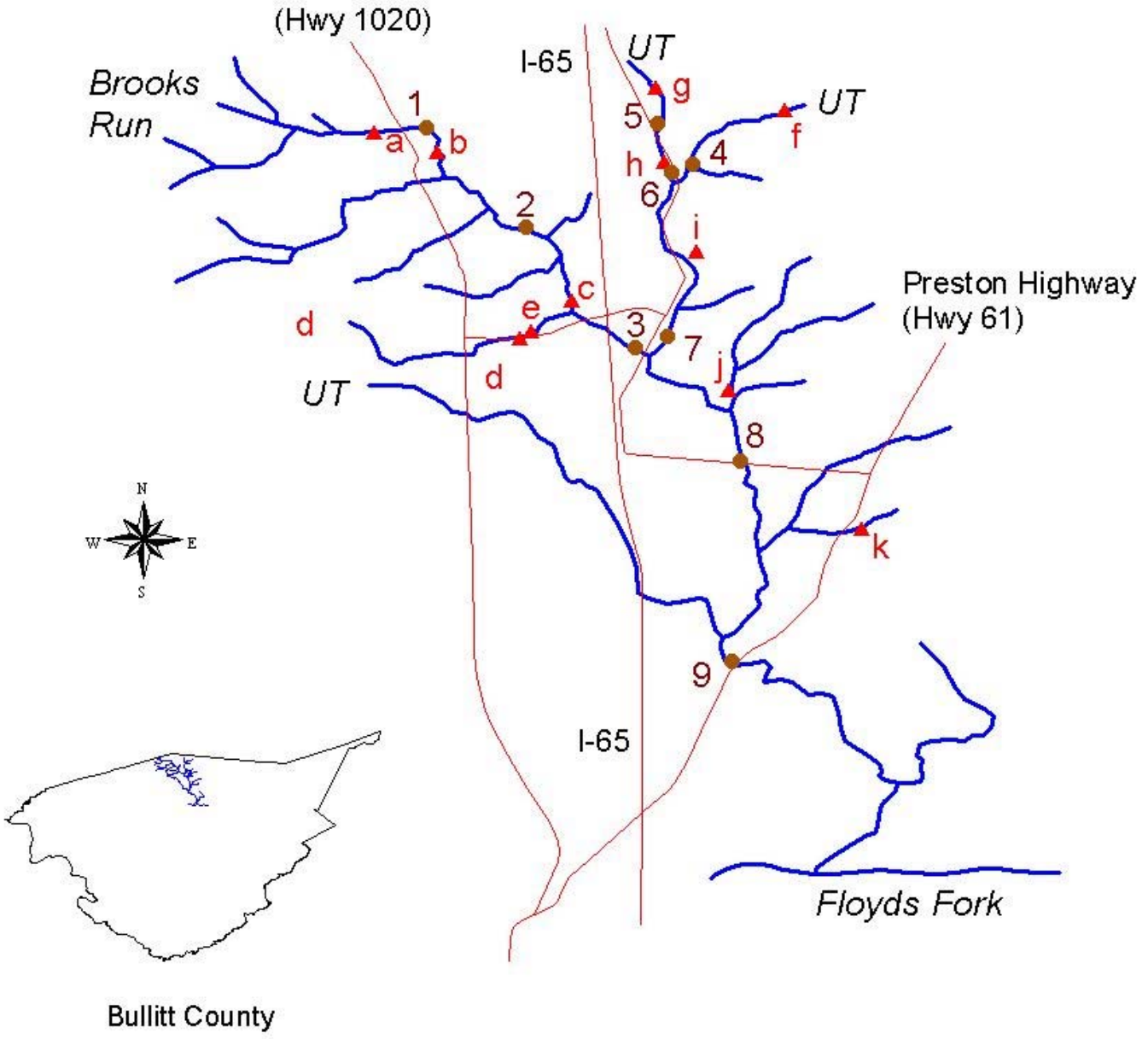

Table 1.
List of Stream Sampling Stations

Map #	Description
1	Brooks Run at mile 5.7, bridge on Sarva Road
2	Brooks Run at mile 5.0, ford on Sarva Road
3	Brooks Run at mile 4.1, below bridge on Highway 1450
4	Unnamed tributary at mile 0.05, downstream of Hillview #2 WWTP
5	Unnamed tributary above Hunters Hollow WWTP
6	Unnamed tributary below Hunters Hollow WWTP
7	Unnamed tributary at mile 0.1, just above confluence with Brooks Run
8	Brooks Run at mile 3.2, at bridge on Hebron Lane (Hwy 1450)
9	Brooks Run at mile 1.9, at culvert on Highway 61

Table 2.
List of Wastewater Treatment Plants

Map #	Facility Name	KPDES #	Design flow (mgd)*
a	L&N Golf Course	KY0077666	0.005
b	Country Living Mobile Home Park	KY0102873	0.015
c	Willabrook	KY0094307	0.12
d	Brooks Elementary School	KY0100994	0.01
e	Pilot Travel Center	KY0096288	0.0175
f	Hillview #2	KY0034169	0.32
g	Whispering Oaks Mobile Home Park	KY0023078	0.125
h	Hunters Hollow	KY0038610	0.24
i	Hillview #3	KY0034177	0.148
j	Pioneer Village	KY0034185	0.31
k	Hebron Middle/High School	KY0100994	0.02

* mgd - million gallons per day

Wastewater Treatment Plants

Throughout the 1960s, 1970s, and midway through the 1980s, development utilizing privately owned package wastewater treatment plants was a common practice, both on a national and statewide basis. In the mid to late 1980s, the KDOW became increasingly more aware and concerned about the problems caused by these facilities. Data compiled from self-monitoring reports required of all point source dischargers, as well as field inspections of permitted facilities and water quality studies, supported anecdotal evidence that private package plants, on the whole, do not perform as well as their municipally owned counterparts (KDOW, 1994). Treatment plant size also has an impact on efficiency: "Small randomly placed wastewater treatment plants can be inefficient in terms of reliability. Studies indicate that there is a high correlation between the size of a treatment plant and the percentage of time during which the plant fails to perform according to design standards. In short, the larger the treatment plant, the more reliable is its performance." (*Water Pollution Control Legislation: Hearings Before the Subcommittee on Air and Water Pollution of the Committee on Public Works*, United States Senate 92d. Congress, Washington, D.C. United States Government Printing Office, May 1971, p. 923).

In order to address these problems, the KDOW began focusing on the concept of regionalization in the early 1990s. This is defined as:

1) the elimination of a treatment facility and diversion of its wastewater flow to a publicly owned treatment works (POTW);
2) the connection of one (1) or more existing facilities into a new or existing regional facility;
3) the prevention of new discharges by requiring connection to an existing facility; or
4) the creation of sanitation districts, regional wastewater authorities, or other cooperative ownership arrangements.

Projects have been, and continue to be, undertaken statewide to eliminate as much as possible privately owned WWTPs. Projects in Boyd, Daviess, Oldham, Jefferson, Fayette, and other counties have eliminated large numbers of package plants located in close proximity to each other.

There are eleven (11) WWTPs located in the Brooks Run basin (Table 2). Two (2) are owned by the local school board, with the remainder privately owned. These range in size from the 5000-gallon per day (gpd) facility serving the L&N Golf Course to the 320,000 gpd Hillview #2 facility. Most are located within just a few miles of each other. As noted above, privately owned WWTPs have been an environmental problem in Kentucky for many years, and northern Bullitt County has not escaped these problems. Water quality has been impacted by the failure of these facilities to consistently meet permit limits. This is discussed in more detail in the next section of this report. Various enforcement actions have been undertaken to bring these facilities into compliance, including formal Notices of Violation resulting in legal action and fines, sewer tap-on bans (allowing no new connections to a facility), and requiring owners to clean sludge deposits out of streams. More recent action has been to require a Sanitary Sewer Overflow Plan from those facilities suspected of having these problems, as evidenced by sludge deposits in the stream, aging infrastructure, or previous history of overflow problems. Some of these problems relate to the general inefficiency and age of these package plants, while others are caused by poor operation and maintenance practices. Water quality in this area of northern Bullitt County is not likely to fully meet state standards until a regional system is available and the existing plants are eliminated.

Water Quality Conditions

From August 3 through 5, 1999, KDOW staff conducted a water quality sampling trip in the Brooks Run Basin (Table 3). Streamflow was fairly low and stable during this period, increasing sowmewhat in a downstream direction as drainage area increased. Weather conditions had been stable and dry for a week prior to sampling. Monthly samples were also collected at Station 9 from April 1999 through January 2000, representing a range of flow and weather conditions (Table 4). The most serious problems noted during the August trip were the Fecal Coliform violations found both in-stream and from some of the WWTPs. Note the 1500 colonies/100 mls measured at Station 2. At the time of this sampling trip, the Country Living Mobile Home Park, upstream of Station 2, was using a septic tank and leach field system for wastewater disposal.

Table 3
Water Quality Data in Brooks Run Basin, August 1999

Map # *	Date	Time	Flow (cfs)	Dissolved Oxygen (mg/l)	pH (Units)	Water Temperature (Deg. C.)	Specific Conductance (umhos)	Fecal Coliform (col/100 mls)	CBOD (mg/l)	Total Suspended Solids (mg/l)	Ammonia (mg/l)	Total Phosphorus (mg/l)
1	8/3/99	8:20	0.20	5.4	7.5	25.0	1250	<10				
2	8/3/99	8:40		5.3	7.6	20.8	1230	1500				
c	8/3/99	9:00	0.07	7.8	7.4	26.2	810	<10				
	8/4/99	9:55		7.5	7.6	25.8	830					
d	8/3/99	9:45	<.001	6.7	7.4	23.4	744	220				
e	8/3/99	9:50	<.001	8.0	7.9	21.6	600	<10				
3	8/3/99	10:00	0.17	7.3	7.7	22.1	917	500				
	8/4/99	7:25		5.3	7.6	20.9	854		1.0	1	<.05	1.91
	8/4/99	9:00		6.1	7.6	21.2	862					
	8/5/99	8:05		5.6	7.6	21.3	842					
f	8/3/99	11:15	0.16	6.4	6.6	27.8	852	<10				
4	8/3/99	11:45		5.5	6.9	22.8	890	520				
	8/4/99	8:00		3.2	6.9	21.7	897					
	8/5/99	7:30		3.3	6.9	22.6	856					
g	8/3/99	10:45	0.14	7.1	7.3	24.4	794	3000				
5	8/4/99	8:15		4.7	7.3	21.3	779					
h	8/3/99	12:15	0.23	7.7	7.3	26.8	660	6800				
	8/4/99	8:30		7.6	7.4	26.5	670					
6	8/3/99	12:30						3000				
	8/4/99	8:05		4.1	7.1	24.4	750					
	8/5/99	7:35		4.2	7.1	24.2	762					

Table 3

Map # *	Date	Time	Flow (cfs)	Dissolved Oxygen (mg/l)	pH (Units)	Water Temperature (Deg. C.)	Specific Conductance (umhos)	Fecal Coliform (col/100 mls)	CBOD (mg/l)	Total Suspended Solids (mg/l)	Ammonia (mg/l)	Total Phosphorus (mg/l)
i	8/3/99	12:40	0.07	7.2	7.0	27.6	820	16000				
	8/4/99	12:20		6.8	7.3	26.8	806					
7	8/3/99	13:50	0.36	11.0	7.9	27.2	772	200				
	8/4/99	7:30		5.6	7.4	22.4	805					
	8/4/99	9:30		6.6	7.4	23.1	801		1.0	1	<.05	1.20
	8/5/99	7:45		5.4	7.3	22.7	802					
j	8/3/99	14:30	0.13	6.8	7.0	28.4	745	10				
8	8/3/99	15:00	0.69	9.9	8.2	25.5	768	300				
	8/4/99	7:50		6.4	7.6	21.2	804					
	8/4/99	10:30		7.9	7.8	22.0	796		0.6	1	<.05	1.12
	8/5/99	8:30		6.3	7.6	21.8	801					
9	8/3/99	15:50	0.75	6.8	7.8	23.6	740	310				
	8/4/99	7:40		6.4	7.7	21.0	760		0.9	1	<.05	1.03
	8/4/99	11:30		6.6	7.7	21.7	760					
	8/5/99	8:15		5.7	7.7	21.8	782					

* Numbered sites are stream sampling stations; Lettered sites are wastewater treatment plants.

Table 4
Monthly Data from Station 9

Date	Time	Flow (cfs)	RP*	Dissolved Oxygen (mg/l)	pH (Units)	Water Temperature (Deg. C.)	Specific Conductance (umhos)	Fecal Coliform (col/100 mls)	CBOD (mg/l)	Total Suspended Solids (mg/l)	Ammonia (mg/l)	Total Phosphorus (mg/l)
4/14/99	8:55		13.87	6.6	7.6	11.0	617		0.6	11	<.05	0.37
5/7/99	8:00		13.51	8.4	7.4	14.2	440			12	0.22	0.29
5/25/99								90				
6/9/99	9:00		14.04	5.8	7.6	22.4	630		0.2	10	0.12	0.98
6/21/99								280				
7/8/99								170				
7/15/99	8:45		14.02	5.9	7.7	21.4	849		0.2	2	<.05	0.59
8/3/99	15:50	0.75	14.06	6.8	7.8	23.6	740	310				
8/4/99	7:40			6.4	7.7	21.0	760		0.9	1	<.05	1.03
8/13/99								200				
9/23/99	8:30		14.90	8.6	7.6	12.4	917		0.4	3	<.05	1.55
9/30/99								140				
10/12/99	8:25		13.83	8.4	7.6	14.2	831			3	<.05	0.69
10/28/99								40				
11/23/99	8:55		13.48	4.5	7.5	10.7	843			4	<.05	1.12
12/15/99	8:10		11.92	11.0	7.6	8.1	625		1.2	5	0.14	0.19
1/25/00	9:45		13.70	13.9	7.7	0.1	726		0.2	3	<.05	0.48

* RP - Reference Point-The distance in feet from a mark on the culvert headwall to the surface of the water.

An RP of 14.06 had a streamflow of 0.75 cfs. A larger RP indicates lower stream flow, while a smaller RP is higher flow.

The system was failing, and the Bullitt County Health Department determined that insufficient space was available for this type of system. A WWTP was approved and brought on line for this facility in December 1999. Other Fecal Coliform violations shown on Table 3 appear to be the result of poor operation of several of the WWTPs in the basin. Thick sludge deposits were also found in-stream below the Hunters Hollow, Hillview #2, and Hillview #3 facilities. Sludge loss to a stream is the result of poor design, poor operation and maintenance of both the treatment plant and collection system, or a combination of these factors. Owners of these facilities were notified to remove the sludge deposits from the streams. Dissolved Oxygen was below the state standard of 5 mg/l at stream stations 4, 5, and 6. Total Phosphorous (TP) concentrations were high at all four (4) of the stations sampled for this parameter, ranging from 1.03 mg/l at Station 9 to 1.91 mg/l at Station 3. Total Phosphorus in streams not impacted by wastewater treatment plants in Kentucky is generally less than 0.2 mg/l. Excessive Phosphorus concentrations contribute to noxious growths of algae, which in turn impact the ability of a stream to support a diverse assemblage of aquatic life. There currently is no numerical standard for Phosphorus. This is a subject of intense national research, and criteria will likely be developed in Kentucky during the next water quality standards review in 2003.

Data collected at Station 9 from monthly sampling over a variety of streamflow conditions showed essentially no violations of water quality standards. The low Dissolved Oxygen value (4.5 mg/l) reported on November 23, 1999 may be the result of some unknown water quality problem, but considering the other constituents and water temperature measured that day, it is more likely a measurement error. This site is several miles downstream of the nearest WWTP and is in a rugged area with steep slopes and less development. Phosphorus concentrations, however, remain elevated. It is interesting to note that TP concentration was lowest (0.19 mg/l) during the highest streamflow condition (as determined from a reference point chiseled into the Highway 61 culvert headwall rail) versus the highest value (1.55 mg/l) during the lowest streamflow condition. This is typical of streams with WWTP discharges, which exert their greatest influence on water quality during low-flow conditions.

Follow-up field trips were conducted on December 6, 2000, and May 2, 2001. The purpose was to determine if the sludge deposits noted in August 1999 had been removed from the streams. On December 6, no sludge was observed below the Hunters Hollow facility, yet problems persisted below the two (2) Hillview facilities. On this trip, severe sludge deposits were found to extend below the Pioneer Village facility. Facilities were again notified to remove these deposits. A mechanical problem was reported to be the cause at Pioneer Village. This was subsequently repaired. On May 2, sludge was found only below the two Hillview facilities. The owner of the Hillview facilities has been the subject of enforcement action for several years. A Hearing Officer's Report, filed on September 20, 2000, with the Office of Administrative Hearings, recommended significant financial penalties and a loss of the owner's license to operate wastewater treatment plants in Kentucky. This has been appealed by the defendant to Circuit Court with responses due in the fall of 2001.

Target Identification and TMDL Development

The endpoint, or goal, of the TMDL is to achieve water constituent concentrations (and associated loads in lbs/day) that allow for the sustainability and full support of aquatic life and contact recreation uses in these stream reaches. The critical flow condition is the 7-day, 10-year low flow (7Q10), because it is during low-flow periods that the stream is most susceptible to wastewater effluents. The natural 7Q10 of this relatively small stream is zero cubic feet per second (cfs), as evidenced by U.S. Geological Survey published data (Ruhl and Martin, 1991) from gaging stations on much larger streams in the same geographic area.

As demonstrated in the previous sections of this report, wastewater effluents from the privately owned wastewater treatment plants are the primary sources of stream impairment. The solution is a regional facility (or facilities), owned by the Bullitt County Sanitation District, that allows for the removal of the existing treatment plants, eliminates areas currently served by septic systems,

and allows for growth. The design flow of a facility (or facilities) to provide for these needs is estimated to be 3.5 million gallons per day (mgd).

A TMDL for low-flow conditions is the sum of three (3) basic components: the natural background load, the wasteload allocation (WLA) for point source discharges, and a margin of safety. In this case, the background load is zero because the critical low-flow condition occurs when there is no natural flow in the stream. The WLA establishes effluent limits for CBOD and NH3-N from a wastewater discharger. These are calculated using well-documented, EPA-approved procedures. These employ the use of a computer model, and Kentucky uses EPA's QUAL2E model for this purpose (Brown and Barnwell, 1987). Maximum values of the pollutants CBOD and NH3-N are set. These and their corresponding loads for a regional facility are shown on Table 5. The loadings are based on a simple conversion of the QUAL2E model concentration inputs (mg/l) multiplied by the WWTP plant size (mgd). Thus, if WWTPs are in need of expansion, the model runs will be revisited, and an increase in loading (lbs/day) could be approved. The margins of safety for these parameters are implicit because the model itself employs conservative assumptions, including the assumptions that the streamflow is zero (no dilution is available) and water temperatures are warm (77 degrees Farenheit). Wastewater effluent has a greater impact upon aquatic life at warm temperatures.

As found from water quality sampling, Phosphorus concentrations are elevated in the Brooks Run basin. Samples collected from a number of municipal dischargers across Kentucky average about 3.0 mg/l. An effluent limit of 1.0 mg/l will be assigned to any new regional facility. This value is commonly being applied to facilities in Kentucky that discharge into nutrient-impacted streams. The corresponding load is shown on Table 5, which is a reduction from the existing loads discharged by the WWTPs in the basin.

Table 5
Effluent Limits and Loadings for a Regional Facility

Facility	Design Flow (mgd)	CBOD Limit (mg/L)	NH3-N Limit (mg/L)	Total Phosphorus (mg/L)	Fecal Coliform (col/100 mls)	CBOD Load (lbs/day)	NH3-N Load (lbs/day)	Total Phosphorus Load (lbs/day)	Fecal Coliform load (col/day)
Regional Facility	3.5	10	2	1	200	292	58.4	29.2	26,495 E6

The endpoint or target of the TMDL is to achieve a Fecal Coliform (FC) count of 400 colonies or less per 100 milliliters of sample (KDOW, 1998a and 1998b). This designated use criteria applies where only periodic samples for FC are collected. For point source permitted to discharge FC (Bullitt County Regional WWTP), the FC count shall not exceed 200 colonies/100 ml of sample as a monthly average, and shall not exceed 400 colonies per 100 milliliters as a maximum of all samples taken during the month. The dischargers are required to submit Discharge Monitoring Reports (DMRs) to the KDOW to assess compliance by the facility. The margin of safety is implicit since the effluent limit is 200 colonies/100 ml versus the criteria of 400 colonies/100 ml. A "load" is calculated by multiplying FC count by the flow amount, arriving at a value with the term "colonies per day." The loads shown in Table 5 are a significant reduction over existing loads (as sampled in August 1999) because there were a number of FC violations at that time. A regional WWTP would eliminate the sources of these violations.

Recommendations

As shown in this report, effluent limits and loads that would be expected to protect water quality in the Brooks Run basin can be calculated. Considering the long history of non-compliance from the privately owned facilities, however, it seems unlikely that these issues will be resolved until such time as a regional facility (or facilities) is built to serve the wastewater needs of this portion of Bullitt County. This process has begun, and will be done incrementally. The Bullitt County Sanitation District will purchase, as funds allow, the existing treatment plants. These would be operated by the district for a period of time, and repairs made as necessary to meet existing permit limits. The district will need to complete a 201 Planning Study, with public review, to determine the future details of providing regional sewer service to this growing area of Bullitt County.

References

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_____ 1998a. 1998 Kentucky report to Congress on water quality. KY Dept. for Environmental Protection. Kentucky Natural Resources and Environmental Protection Cabinet. Frankfort, KY.

_____ 1998b. Removing fecal pollution from the Upper Cumberland River Basin Department for Environmental Protection. Kentucky Natural Resources and Environmental Protection Cabinet. Frankfort, KY.

Ruhl, K. J. and Martin, G. R. 1991. Low-flow characteristics of Kentucky streams. U.S. Dept. of Interior, Geological Survey, Water-Resources Investigations Report 91-4097.

Appendix I

List of Documents

L. H. BRADLEY
SECRETARY

WALLACE G. WILKINSON
GOVERNOR

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
FRANKFORT OFFICE PARK
18 REILLY ROAD
FRANKFORT, KENTUCKY 40601

February 16, 1990

Honorable Glenn Armstrong
County Judge/Executive
Bullitt County Courthouse
Shepherdsville, Kentucky 40165

Dear Judge Armstrong:

Thank you for meeting with us on December 19 to discuss regionalization of wastewater facilities in Bullitt County. For your files, following is a list of the persons from this office in attendance with me that day:

Paul Fitch	Project Engineer	502/564-3410 Ext. 478
Bill Gatewood	Manager, Construction Grants Branch	502/564-3410 Ext. 440
John Hornback	Manager, Compliance & Enforcement Branch	502/564-3410 Ext. 430

After the meeting, we went with Dave Derrick to visit Briarwood and Wheel Estates and discussed the possible elimination of one package treatment plant. It appears that a county system will not be available within a time frame suitable to the owners of these facilities. Therefore, it will not be possible to take this opportunity to connect all customers to a county regional system and eliminate both plants.

I am enclosing some information which was developed around the time of our earlier visit with Clifford Haley and recently modified based on our discussion. Even though it will appear to you that a significant amount of time and money would be required to implement a public system, I ask that you seriously consider proceeding with establishment of a sanitation district. The amount of effort required by the fiscal court to accomplish this will be of great benefit to the county in years to come. We would encourage you to work toward having the established district own and operate all newly constructed package plants in the county, even without construction of a regional sewer system. Once the district

has some operating experience, you will see ways to finance the total regional system needed. One such source of funding is the federally assisted wastewater revolving fund for which I am enclosing a descriptive pamphlet. Should you have any questions concerning funding or any other items, please call Bill Gatewood of this office at 502/564-3410.

Sincerely,

Jack A. Wilson
Director
Division of Water

JAW:WBG:pam

Enclosures

GLENN L. ARMSTRON
BULLITT COUNTY JUDGE/EXECUT
SHEPHERDSVILLE, KENTUCKY 40

December 14, 1993

Mr. Dave Leist, P.E.
Natural Resources, Protection & Envi
Department for Environmental Cabinet
Division of Water
Frankfort Office Park
14 Reilly Road
Frankfort, Kentucky 40601

RE: Sewers in Bullitt County

Dear Mr. Leist:

Bullitt County does not have a County Sewer Plant at this time.

We do not have any plans as of this date to consider a County Sewer Plant.

Sincerely,

Glenn L. Armstrong
Bullitt County Judge/Executive

GLA:ds

cc: Mr. Dave Derrick
Derrick Engineering, Inc.
1397 South 3rd Street
Louisville, Kentucky 40208

Gerald P. Burke
3402 Burkland Boulevard
Shepherdsville, Kentucky 40165

PHILLIP J. SHEPHERD
SECRETARY

BRERETON C. JONES
GOVERNOR

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
FRANKFORT OFFICE PARK
14 REILLY ROAD
FRANKFORT, KENTUCKY 40601

July 6, 1994

Mark E. Edison
City Attorney, Fox Chase, KY
P.O. Box 682
216 South Buckman Street
Shepardsville, Kentucky 40165

RE: Brooks Run, Bullitt County

Dear Mr. Edison:

We have reviewed your request that we conduct a water quality test on Brooks Run to determine if this water is safe for primary contact recreation (swimming and wading). In 1988, we conducted sampling in Brooks Run and determined that this stream did not support the primary contact recreation use. The cause of non-support was fecal coliform bacteria, the source from package wastewater treatment plants and urban runoff. Although we believe the treatment plants are better operated today, the overall conditions in Brooks Run have not changed appreciably since that time and therefore we continue to publish this stream as not supporting primary contact recreation. This information is published every other year in what is called the "305-B Report to Congress on Water Quality." Copies of this report are sent to a variety of sources, including libraries and local Area Development Districts. I believe Bullitt County is within the KIPDA (Kentucky-Indiana Planning and Development Agency) District. The work done in 1988 was brought about because a local church was baptizing people in a pool of Brooks Run, and received considerable media attention at that time.

Because of conditions in Brooks Run, we have denied several requests for new wastewater treatment facilities and expansion of existing facilities that have operational problems. We have tried unsuccessfully for a number of years to get Bullitt County to form a countywide Sanitation District to provide a comprehensive sanitary sewer system and regional treatment plant, thus eliminating many of the existing facilities while providing for growth and development. We are pleased that the new County Judge,

John Harper, has shown a strong willingness to confront these issues and has recently proposed an ordinance to form a Sanitation District. Any support you and the city of Fox Chase can give the Judge in this endeavor would certainly be helpful.

We suggest you contact the local health department for any additional data they might have on Brooks Run. I would hesitate to collect sporadic water samples because one set of samples may be "clean," providing a false sense of security when in fact a mechanical failure at any one of the package plants (shown on the attached map) could create a health risk. It is our belief that Brooks Run should not be used as a significant source of local recreation, and again urge you to support county regionalization of wastewater treatment to solve this problem.

Sincerely,

Jack A. Wilson, Director
Division of Water

JAW:DL:mw

Attachment

cc: John Harper, Bullitt County Judge Executive
Mike Mudd, DOW

Neighbo

EDITOR: FRAN JEFFRIES
PHONE: 582-4120 / FAX: 582-7080

A WEEKLY SECTION OF THE COURIER-JOU

State urges county to act now to replace failing sewer plants

By LAURIE OGLE WHITE
Staff Writer

Bullitt County's small, privately owned sewage-treatment plants are environmental time bombs that could jeopardize Bullitt's commercial and residential development.

That was the message state officials delivered last week to county officials, who have ignored their warnings in the past.

Development in Bullitt's rapidly developing north end has already been hindered because Brooks Run, a tributary of Floyds Fork, is so polluted. Eleven package plants discharge wastewater into Brooks Run.

At least two applications for plants on the tributary have been turned down in the past several years, according to Dave Leist, an environmental engineer with the Kentucky Division of Water.

State officials have long been frustrated by Bullitt's reluctance to address its waste-treatment problems.

Bill Gatewood, manager of the state Division of Water's facilities construction branch, told Fiscal Court magistrates last week that Bullitt's situation is among the worst in the state.

It's the same message state officials delivered more than a year ago, but this time county officials say they are going to do something about it.

At the urging of 3rd District Magistrate R. L. "Rip" Carter, magistrates agreed to reactivate a committee formed last fall to study the feasibility of creating a sanitary sewage district.

The 20-member committee — which includes Fiscal Court members, Gatewood, package-plant owners, developers and business people — will meet at 6:30 p.m. July 26 in the Fiscal Court room. The public and those interested in serving on the committee are invited to attend.

Gatewood outlined a proposal at the court's June 20 meeting that would enable the county to form a regionalized sanitary district to oversee — and eventually take over — small package-treatment plants, many of which he said are shoddily run and frequently fail.

"We think this is going to be a problem for you in the years to come," Gatewood said.

He tried to persuade magistrates to write a centralized sewage-treatment plan in the spring of 1994, at the urging of Judge-Executive John Harper, but Harper and the court balked after learning in August 1994 they could not form a district with-

See SEWER
Page 2, col. 4

Age, lack of supervision hurt plants

By BILL WOLFE
Staff Writer

Brooks Run, a tributary of Floyds Fork, is home to 11 of Bullitt County's 23 package wastewater-treatment plants. Not coincidentally, it's also the most heavily polluted stream in the county, failing state standards as a home for aquatic life and as a recreational site for people.

And while Brooks Run may suffer the worst damage, it's not the only stream beset by pollutants from the plants.

Package plants use the same technology as large municipal facilities on a much smaller scale, serving individual residences, small cities, subdivisions, industrial sites and schools.

While plants can be well-run, many are aging systems operating with inadequate supervision or maintenance. If not working properly, they dump bacteria and excessive nutrients into the water.

Since 1985, 15 plants in Bullitt County have been turned over to the Division of Water's enforcement office because of serious discharge violations. The state is currently taking action against the plants at Big Valley, Bullitt Hills and Hunters Hollow subdivisions and at Woodland Acres mobile-home park.

A 1994 report from the state Division of Water contends that "many package plants are burdened be-

See PLANTS
Page 2, col. 3

Sewer plants need attention

Continued from Page One

out creating a tax.

The ordinance was tabled when Harper received a state attorney general's opinion that said the district could not be formed without a taxing authority.

When they abandoned the proposal, magistrates were faced with borrowing $900,000 to pay for the closure of the Collins Hill Road landfill near Lebanon Junction. Magistrates said they were reluctant to borrow any more money or create a new tax to form the district because they already were strapped by the landfill loan, which the county will begin paying off in December 1996.

Although they agreed last fall to form the 20-member committee to study the feasibility of forming a sanitary district, the committee never met.

Carter vowed last week that the committee would meet and resolve the dilemma. "We need to get on this and stay on it," he said.

Although reluctant to borrow and tax, Harper said he and the magistrates may have to bite the bullet and slowly begin taking over sewage treatment in the county.

The county must at least develop a plan and begin carrying it out to satisfy state water officials, Leist said.

"I would say they're one of the neediest because they're not making much progress," Leist said. He said Oldham County faces a similar dilemma, but the Division of Water is at least getting cooperation there with a well thought-out plan.

Gatewood said Bullitt should consider the path taken by Boyd County in Eastern Kentucky.

Boyd, which had 50 package plants, some that failed and caused sewage to run into open ditches, borrowed $2 million in 1991 to start its project, Gatewood said. The county laid lines to transport waste to Ashland's sewage-treatment plant and was able to close all 50 plants.

Boyd County borrowed another $6 million last September to continue expanding, he said.

The current loan rate offered by the Division of Water is 3.3 percent for a 20-year loan, Gatewood said. He said the county could start small, with only a specific area to serve, then grow from there.

Gatewood said the system pays for itself through user fees. Boyd County's users, for example, pay $28 per month for the service, he said, and the money is used to pay back the loans.

Although there is no state law that makes counties take responsibility for sewage treatment, Gatewood said the day could be coming when package plants are a thing of the past. Some states, he said, already outlaw them, and his agency is under a mandate that, in effect, discourages their construction.

"We have cut down considerably on new sewage-treatment plants," Gatewood said.

Plants source of pollution

Continued from Page One

yond their design" and send poorly treated waste into streams.

New plants do continue to come into use in the county. Since 1989, construction permits have been issued for 11 — including units for an interstate-highway rest stop, a residential subdivision, a school and a mobile-home park, said Bill Gatewood, manager of facilities construction for the Kentucky Division of Water.

Officials say there are several reasons why the plants should be replaced by a regional system.

Most package plants have a life of 15 to 20 years — and some of those in Bullitt County are already past that age, said James Daniel of the Division of Water. That makes effective operation of the plants increasingly problematic.

In addition, the small size of the plants makes them vulnerable to disruptions. Wastes tend to flow in surges that are difficult for the plant to accommodate.

Such surges can overload the plant, killing the special microorganisms the facilities use to eat wastes.

"Surges are hard for any plant to handle. Bigger plants have more capacity to absorb the surge," Daniel said.

What's more, small plants often do not receive the painstaking, skilled operation needed to keep them working properly, he said.

Sometimes the problem boils down to bad plant owners and operators, he said. Developers use package plants to open a subdivision, then "once all the lots are sold they have very little interest in keeping that plant going."

And if the plant is set up as a corporation — with the plant itself as the only asset — state regulators have little leverage to use with the developers. Not even heavy fines against the corporation are effective.

"If the corporation goes broke, (the developers) haven't lost anything but the plant," Daniel said. And "after 10 or 12 years, it's worth nothing. Consequently, we don't have anyone to go after. . . . In essence, they become judgment-proof."

He wants the state to require developers to post bonds ensuring maintenance of the plants. Another helpful change would be to make the people who form the corporation accountable for the violations at the plant.

Jeff Frank, a Jefferson County resident who often hikes along streams, said he can tell quickly when he's downstream from a poorly run plant.

"It is like night and day upstream and downstream of these discharges," Frank said.

In cleaner areas, "you've got a little stream that's loaded with algae and invertebrates," he said. But downstream of the treatment plant, "you see that there's no algae present, and the only bugs left are those that can live in human wastes."

JAMES E. BICKFORD
SECRETARY

PAUL E. PATTON
GOVERNOR

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
FRANKFORT OFFICE PARK
14 REILLY RD
FRANKFORT KY 40601

March 21, 1997

The Honorable Richard Terry
Mayor, City of Hillview
298 Prairie Drive
Hillview, Kentucky 40229

Dear Mayor Terry:

Thank you for your letter concerning wastewater treatment in Hillview and northern Bullitt County. You noted your desire that interim expansion of existing privately owned wastewater facilities be approved by the Division of Water while regional planning is undertaken. We currently have no requests for your area, but wish to inform you of the factors we must consider when reviewing such requests. First is the water quality conditions of the receiving waters. Many of the streams in northern Bullitt County fail to meet water quality criteria. Regulation 401 KAR 5:055 sections 2 and 7 require the Division to deny a facility which would discharge into a stream that fails to meet its designated uses unless the addition can be shown to improve existing conditions. Expansion or construction of new privately owned wastewater treatment facilities does not meet this criteria. A second factor we must consider is the compliance history of the existing facility. We do not approve expansion of facilities that fail to meet permit requirements until that facility is repaired and in full compliance.

I hope this helps explain the main criteria we must follow when considering wastewater treatment plant projects. Each project is carefully reviewed with these and other factors in mind. Please call me at (502)564-3410 if you have any questions concerning this correspondence.

Sincerely,

for **Jack Wilson, Director**
Division of Water

JAW:DL:jr

JAMES E. BICKFORD
SECRETARY

PAUL E. PATTON
GOVERNOR

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
FRANKFORT OFFICE PARK
14 REILLY RD
FRANKFORT KY 40601

July 21, 1999

Roy Flynn, P.E.
Gresham Smith & Partners
239 South Fifth Street, Suite 1200
Louisville, Kentucky 40202

Re: Wastewater Treatment Plant Proposal
Tanyard Branch, Bullitt County, Kentucky

Dear Mr. Flynn:

In response to your preliminary request for a wastewater treatment facility for a new development along Tanyard Branch in Bullitt County, we are unable to grant your request at this time.

A number of reports published by MSD and the U.S. Geological Survey describe serious water quality problems in the streams draining into this area of northern Bullitt County. The most significant impact is from the numerous privately owned package wastewater treatment plants located within Jefferson and Bullitt Counties. For well over ten years, the Division of Water has advocated the need for regional sewer systems to serve these rapidly growing areas. Significant progress has been made in Jefferson County, however because of budget constraints and other problems, Bullitt County is only beginning to address these issues. Bullitt County formed a Sanitation District a few years ago, however they remain unfunded and little progress toward solving these problems has occurred. Your request is the eighth denial this Division has made for new or expanded sewage treatment facilities in the northern Bullitt county area. A regional solution is clearly needed. Attached is a document the Division prepared in 1994 that describes the problems with package treatment facilities and the need for Regionalization. The Division is aggressively pursuing this statewide, and significant water quality improvements have been achieved in a number of areas in Kentucky.

Authority for this denial is based upon regulation 401 KAR 5:035, Section 3. This states that the Cabinet for Natural Resources and Environmental Protection may deny a permit to any applicant where the discharge, in the judgment of the Cabinet, does not conform to the policy of the Commonwealth as set forth in KRS 224.020. KRS 224.020 (re-codified as 224.70-100) states in part that it is the policy of the Commonwealth to "provide a comprehensive program in the public interest for the prevention, abatement, and control of pollution."

Mr. Richard Terry, former mayor of the city of Hillview, had expressed concern about the lack of sewer service in this rapidly growing area. We met with the Mr. Terry, Dave Derrick of Derrick Engineering, and Frank Wethington, owner of several facilities in the area, on May 6, 1997. The possibility of expanding existing facilities to accommodate growth was discussed. We determined that expansion was possible, provided the Sanitation District approved this action, provided the facility is in full compliance with permit conditions, and the owner(s) are in compliance with any other permits they may hold for other facilities. Effluent limits for any expanded facility would be more strict than current limits and would require phosphorus removal. You may wish to contact the current mayor, Mr. Leemon Powell, as to the status of the city's efforts on this issue.

If you would like to submit a formal permit application, please contact Courtney Seitz at (502) 564-2225, extension 465, to obtain appropriate Kentucky Pollutant Discharge Elimination System application forms and instructions. This application begins the more formal process whereby the Division makes decisions regarding permit actions. An official denial of your proposal through this process entitles you to request a hearing under KRS 224.10-420(2). If you wish to discuss this preliminary action further, contact Dave Leist at (502) 564-2225, extension 456.

Sincerely,

R. Bruce Scott, P.E.
Environmental Engineer Branch Manager
KPDES Branch
Division of Water

RBS:DL:fd

c: Mayor Leemon Powell
Mr. Ken Stout
Mr. Dave Derrick
Louisville Regional Office
Division of Water Files

Bullitt County Sanitation District

Bullitt County, Kentucky

P.O. Box 1211 Mt. Washington, Kentucky 40047

Kenneth Rigdon
Bullitt Co. Judge Exec. 543 2262

David Derrick
Cunsulting Enginner 636-9273

Commissioners

Kenneth Stout *Chairman* 955-7516
Jim Hamilton *V. Chair. & Tr.* 543-2600
Kevin Holloway *Secretary* 955-6962

1999 JUL 28 P 4:08

July 23, 1999

RECEIVED BY KPDES BRANCH

R. Bruce Scott, PE
Environmental Engineer Branch Manager
KPDES Branch
Division of Water
14 Reilly Road
Frankfort Office Park
Frankfort, KY 40601

Dear Mr. Scott:

Thank you for the copy of your reply to Mr. Roy Flynn of Gresham Smith & Partners on July 21, 1999. In your letter you stated that this was the 8th denial this division has made for new or expanded sewage treatment facilities during the Sanitation District's existence. I am aware of a couple of situations where the District approved a small treatment facility and I believe Kentucky Division of Water also. I do not believe the Bullitt County Sanitation District has denied eight sewage treatment expansions or facilities during out existence. I understand from several individuals that the Division of Water does not believe that the Bullitt County Sanitation District is doing anything to help improve the sewage problems in north central Bullitt County.

As your department knows, after forming the District, several months elapsed before commissioners were appointed. Since that time, we have advertised and hired Derrick Engineering to do the 2001 facility plan. The Sanitation District has also met and discussed purchasing arrangements with four of the current operators in that area. Of course, several months are involved with each operator before any purchasing decisions can be made. We are currently, and have been for five months, discussing a proposal with one of the operators. This particular plant would allow the District to include two smaller plants by eliminating the need for separate operations. We have met with the Bullitt County Economic Development Director on many occasions concerning the needs. We have talked and discussed several issues with Bullitt County Judge Executive Rigdon. And we have discussed proposals with several property owners and developers in the area. We are continually moving forward in the direction of one or two regional or semi-regional plants and the elimination of those 17 individual plants that the Division of Water would like to see corrected or replaced. As soon as future developments occur, we will keep your office informed as to the work being done by the Bullitt County Sanitation District.

Sincerely,

KENNETH E. STOUT
CHAIRMAN

C: Dave Derrick, Derrick Engineers
Bill Gatewood, PE Manager

km